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JUL 30 2007

U.S.S.N. 10/788,912

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Chen et al

Group Art Unit: 2891

Serial No.: 10/788,912

Examiner: Sarkar, Asok

Filed: 02/27/2004

For: Method of Forming Barrier Layer with Reduced Resistivity and Improved Reliability

Attorney Docket No.: 67,200-1210 (2003-0648)

CERTIFICATE OF MAILING OR FACSIMILE TRANSMISSION

I hereby certified that this correspondence is (1) ☐ being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P O Box 1450, Alexandria, VA 22313-1450 on January ____, 2007; or (2) ☒ being facsimile transmitted to the United States Patent and Trademark Office at facsimile number (571)-273-8300 January 7/30, 2007.

Randy W. Tung

Printed Name

Signature

7/30/07

Date

Please forward all correspondence to

TUNG & ASSOCIATES

838 W. Long Lake Road, Suite 120
Bloomfield Hills, MI 48302REQUEST FOR PATENT TO BE CORRECTED TO STATE THE NAME OF THE ASSIGNEEAssistant Commissioner
for Patents
P.O. Box 1450
Alexandria, Va 22313-1450

Attn: Office of Petitions

Dear Sir:

In response to an Office Communication mailed by PTO, the Applicants respectfully submit the assignment showing it was submitted for recordation before the issuance of the patent, and also submit the processing fee set forth in 37 CFR 1.17. The Applicants however request a credit of \$100 due to a previous payment on 11/16/2006.

07/31/2007 SSANDARA 00000011 10788912


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01 FC:1464

130.00 OP

U.S.S.N. 10/788,912

Respectfully submitted,



Randy W. Tung,
Registration No. 31311

JUL 30 2007

PTO/SB/17i (09-06)

Approved for use through 03/31/2007. OMB 0851-0031
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| | | |
|---|------------------------|-------------------------|
| PROCESSING FEE Under 37 CFR 1.17(i) TRANSMITTAL (Fees are subject to annual revision) | Application Number | 10/788,912 |
| | Filing Date | 02/27/2004 |
| | First Named Inventor | Chen et al |
| | Art Unit | 2891 |
| | Examiner Name | Sarkar, Asok |
| | Attorney Docket Number | 67,200-1210 (2003-0648) |

Send completed form to: Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450

Enclosed is a paper filed under 37 CFR 3.81 that requires a processing fee (37 CFR 1.17(i)).
 Payment of \$130.00 is enclosed.

This form should be included with the above-mentioned paper and faxed or mailed to the Office using the appropriate Mail Stop, if applicable. For transmittal of petition fees under 37 CFR 1.17(f), (g) or (h), see form PTO/SB/17p.

Payment of Fees (small entity amounts are NOT available for the processing fees)

☐ The Commissioner is hereby authorized to charge the following fees to Deposit Account No. _____:

☐ processing fee under 37 CFR 1.17(i) ☐ any deficiency of fees and credit of any overpayments

Enclose a duplicative copy of this form for fee processing.

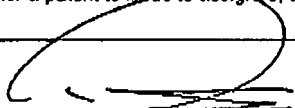
☐ Check in the amount of \$ _____ is enclosed.

☒ Payment by credit card (Form PTO-2038 or equivalent enclosed). Do not provide credit card information on this form.

**Processing Fees under 37 CFR 1.17(i): Fee \$130 Fee Code 1808 for all,
 Except for § 1.221 papers (Fee Code 1803)**

For papers filed under:

- § 1.28(c)(3) - for processing a non-itemized fee deficiency based on an error in small entity status.
- § 1.41 - for supplying the name or names of the inventor or inventors after the filing date without an oath or declaration as prescribed by § 1.63, except in provisional applications.
- § 1.48 - for correcting inventorship, except in provisional applications.
- § 1.52(d) - for processing a nonprovisional application filed with a specification in a language other than English.
- § 1.53(b)(3) - to convert a provisional application filed under § 1.53(c) into a nonprovisional application under § 1.53(b).
- § 1.55 - for entry of late priority papers.
- § 1.71(g)(2) - to enter an amendment to the specification for purposes of 35 U.S.C. 103(c)(2) if not filed within the cited time periods
- § 1.99(a) - for processing a belated submission under § 1.99.
- § 1.103(b) - for requesting limited suspension of action, continued prosecution application (§ 1.53(d)).
- § 1.103(c) - for requesting limited suspension of action, request for continued examination (§ 1.114).
- § 1.103(d) - for requesting deferred examination of an application.
- § 1.217 - for processing a redacted copy of a paper submitted in the file of an application in which a redacted copy was submitted for the patent application publication.
- § 1.221 - for requesting voluntary publication or republication of an application. **Fee Code 1803**
- § 1.291(c)(5) - for processing a second or subsequent protest by the same real party in interest.
- § 1.497(d) - for filing an oath or declaration pursuant to 35 U.S.C. 371(c)(4) naming an inventive entity different from the inventive entity set forth in the international stage.
- § 3.81 - for a patent to issue to assignee, assignment submitted after payment of the issue fee.



 Signature
 Randy W. Tung

 Typed or printed name

7/30/07

 Date
31,311

 Registration No., if applicable

This collection of information is required by 37 CFR 1.17. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

**UNITED STATES PATENT AND TRADEMARK OFFICE**UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

SEPTEMBER 02, 2004

PTAS



102688558A

TUNG & ASSOCIATES
RANDY W. TUNG
838 W. LONG LAKE ROAD
STE. 120
BLOOMFIELD HILLS, MI 48302UNITED STATES PATENT AND TRADEMARK OFFICE
NOTICE OF RECORDATION OF ASSIGNMENT DOCUMENT

THE ENCLOSED DOCUMENT HAS BEEN RECORDED BY THE ASSIGNMENT DIVISION OF THE U.S. PATENT AND TRADEMARK OFFICE. A COMPLETE MICROFILM COPY IS AVAILABLE AT THE ASSIGNMENT SEARCH ROOM ON THE REEL AND FRAME NUMBER REFERENCED BELOW.

PLEASE REVIEW ALL INFORMATION CONTAINED ON THIS NOTICE. THE INFORMATION CONTAINED ON THIS RECORDATION NOTICE REFLECTS THE DATA PRESENT IN THE PATENT AND TRADEMARK ASSIGNMENT SYSTEM. IF YOU SHOULD FIND ANY ERRORS OR HAVE QUESTIONS CONCERNING THIS NOTICE, YOU MAY CONTACT THE EMPLOYEE WHOSE NAME APPEARS ON THIS NOTICE AT 703-308-9723. PLEASE SEND REQUEST FOR CORRECTION TO: U.S. PATENT AND TRADEMARK OFFICE, ASSIGNMENT DIVISION, BOX ASSIGNMENTS, CG-4, 1213 JEFFERSON DAVIS HWY, SUITE 320, WASHINGTON, D.C. 20231.

RECORDATION DATE: 02/27/2004

REEL/FRAME: 015034/0707
NUMBER OF PAGES: 3

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

CHEN, KEI-WEI

DOC DATE: 11/19/2003

ASSIGNOR:

TSAO, JUNG-CHIH

DOC DATE: 11/19/2003

ASSIGNOR:

LIU, CHI-WEN

DOC DATE: 11/19/2003

ASSIGNOR:

CHEN, JCHUNG-CHANG

DOC DATE: 11/19/2003

ASSIGNOR:

CHANG, SHIH-TZUNG

DOC DATE: 11/19/2003

ASSIGNOR:

LIN, SHIH-HO

DOC DATE: 11/19/2003

015034/0707 PAGE 2

ASSIGNOR:
YU-KU-LIN

DOC DATE: 11/19/2003

ASSIGNOR:
WANG, YING-LANG

DOC DATE: 11/19/2003

ASSIGNEE:
TAIWAN SEMICONDUCTOR MANUFACTURING
CO. LTD.
NO. 8 LI-HSIN RD. 6
SCIENCE-BASED INDUSTRIAL PARK
HSIN-CHU, TAIWAN R.O.C.

SERIAL NUMBER: 10788912

FILING DATE: 02/27/2004

PATENT NUMBER:

ISSUE DATE:

TITLE: METHOD OF FORMING BARRIER LAYER WITH REDUCED RESISTIVITY AND
IMPROVED RELIABILITY IN COPPER DAMASCENE PROCESS

STEVEN POST, EXAMINER
ASSIGNMENT DIVISION
OFFICE OF PUBLIC RECORDS

PTO-1595

REC

HEET U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

To the Honorable Commissioner of Patents 102688558

ed original documents or copy thereof.

| | |
|--|--|
| 1 Name of conveying party(ies): KEI-WEI CHEN JUNG-CHIH TSAO CHI-WEN LIU JCHUNG-CHANG CHEN SHIH-TZUNG CHANG SHIH-HO LIN YU-KU-LIN YING-LANG WANG | 2 Name and address of receiving party(ies): Taiwan Semiconductor Manufacturing Co. Ltd. No. 8, Li-Hsin Rd. 6 Science-Based Industrial Park Hsin-Chu, Taiwan, R.O.C. <div style="text-align: right;"> RECEIVED CENTRAL FAX CENTER JUL 30 2007 </div> |
| 3 Nature of conveyance: <input checked="" type="checkbox"/> Assignment <input type="checkbox"/> Merger <input type="checkbox"/> Security Agreement <input type="checkbox"/> Change of Name <input type="checkbox"/> Other: Execution Date: November 19, 2003 | Additional name(s) & address(es) attached <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4 Application number(s) or patent number(s): 101788912 If this document is being filed together with a new application, the execution date of the application is: 11/19/03 | |
| A. Patent Application No(s). | B. Patent No(s) |
| Additional numbers attached? <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 5 Name and address of party to whom correspondence concerning document should be mailed: RANDY W. TUNG Tung & Associates 838 W. Long Lake Road Suite 120 Bloomfield Hills, Michigan 48302 | 6 Total number of applications and patents involved: 1 7 Total fee (37 CFR 3.41) \$40.00 <input type="checkbox"/> Enclosed <input checked="" type="checkbox"/> Authorized to charge credit card (w/filing fee) 8 Deposit Account Number: (Attach duplicate copy of this page if paying by deposit account) |

03/04/2004 WASFAW1 00000049 10788912

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|---|
| 9 Statement and signature. To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document. Randy W. Tung Name of Person Signing Registration No. 31,311 <div style="text-align: center;"> Signature </div> <div style="text-align: right;"> Feb. 27/04 Date </div> |
|---|

Total number of pages including cover sheet, attachments, and document: 3

67,200-1210

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

67,200-1210
2003-0648RECEIVED
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JUL 30 2007

ASSIGNMENT

WHEREAS, we, KEI-WEI CHEN, JUNG-CHIH TSAO, CHI-WEN LIU, ICHUNG-CHANG CHEN, SHIH-TZUNG CHANG, SHIH-HO LIN, YU-KU LIN and YING-LANG WANG, have invented certain improvements in

METHOD OF FORMING BARRIER LAYER WITH REDUCED RESISTIVITY AND
IMPROVED RELIABILITY IN COPPER DAMASCENE PROCESS

for which we are about to make application for Letters Patent of the United States; and

WHEREAS, TAIWAN SEMICONDUCTOR MANUFACTURING CO., LTD. of No. 6, Li-Hsin Rd. 6, Science-Based Industrial Park, Hsin-Chu, Taiwan, R.O.C, is desirous of acquiring the entire right, title and interest in and to said invention;

NOW, THEREFORE, in consideration of One Dollar (\$1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, we KEI-WEI CHEN, JUNG-CHIH TSAO, CHI-WEN LIU, ICHUNG-CHANG CHEN, SHIH-TZUNG CHANG, SHIH-HO LIN, YU-KU LIN and YING-LANG WANG, by these presents, do hereby sell, assign and transfer unto the said corporation and its assigns, for the territory of the United States of America and all foreign countries, the entire right, title and interest, including all priority rights under the International Convention associated with each country of the Union, in and to said invention as described in the patent application executed by us on the 19 day of Nov, 2003, preparatory to obtaining Letters Patent of the United States

67,200-1210

7003-0648

thereon, and in and to said application and any Letters Patent that may be granted in pursuance of said application and any divisional, continuation or continuation-in-part application thereof, and in and to any reissue of any such patent, and in and to any patent applications which may be filed on said invention in countries foreign to the United States and any Letters Patent granted thereon.

We further authorize said corporation to apply for foreign patents on said invention in its own name or through its designees, including subsidiaries, related companies or assignees, under the International Convention or otherwise, and we further agree to execute all papers, including those required for the United States and foreign applications, and to perform such other proper acts as said corporation or its designees the rights herein assigned.

Kei-Wei Chen
KEI-WEI CHEN

Jung-Chih Tsao
JUNG-CHIH TSAO

Chi-Wen Liu
CHI-WEN LIU

Jchung-Chang Chen
JCHUNG-CHANG CHEN

Shih-Tzung Chang
SHIH-TZUNG CHANG

Shih-Ho Lin
SHIH-HO LIN

Yu-Ku Lin
YU-KU LIN

Ying-Lang Wang
YING-LANG WANG

TUNG & ASSOCIATES
838 W. Long Lake Road
Suite 120
Bloomfield Hills, Michigan 48302



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

T-1210

Patent No. : 7,071,100 B2
Serial No. : 10/788,912
Inventor(s) : Chen et al.
Issued : July 4, 2006
Title : **METHOD OF FORMING BARRIER LAYER
WITH REDUCED RESISTIVITY AND IMPROVED
RELIABILITY IN COPPER DAMASCENE PROCESS**
Docket No. : 67,200-1210

Re: Request for Certificate of Correction

Consideration has been given your request for the issuance of a certificate of correction for the above-identified patent under the provisions of 37 CFR 1.322 and/or 1.323.

A petition under 37 CFR 1.183 is required to correct the assignee data, and not by a request for certificate of correction only.

Assignees' and/ or Co-assignees' names and addresses (assignment data) printed in a patent are based *solely* on information supplied in the appropriate space for identifying the assignment data, i.e., item 3 of the Fee(s) Transmittal Form PTOL-85B. After payment of the issue fee, correction of assignment data submitted on the PTOL-85B can only be done by Certificate of Correction under 37 CFR 1.323, with a request under 37 CFR 3.81(b).

A request for a patent to be corrected to state the name of the assignee must:

- ☒ A. state that the assignment was submitted for recordation as set forth in 37 CFR 3.11 before issuance of the patent;
- ☐ B. include a request for a certificate of correction under 37 CFR 1.323 along with the fee set forth in 37 CFR 1.20(a); and
- ☒ C. include the processing fee set forth in 37 CFR 1.17(i).

If the request is granted, Certificate of Correction Branch will be notified that a Certificate of Correction may be issued.

See Manual of Patent Examining Procedure, Section 1481.01 (Rev. 3) (Oct. 2005).

Applicant has not included items A and or C above, accordingly, the request for Certificate of Correction to add or change the assignee data is dismissed.

Any request under 37 CFR 3.81(b) should be directed to the following address or facsimile number:

By mail: Mail Stop PETITIONS

Commissioner for Patents
Post Office Box 1450
Alexandria, VA 22313-1450

By hand:

Customer Service Window
Mail Stop Petitions
Randolph Building
401 Dulany Street
Alexandria, VA 22314

By fax:

571-273-8300
ATTN: Office of Petitions

If a fee (currently \$100) was previously submitted for consideration of a Request for Certificate of Correction, under CFR 1.323, to correct assignment data, no additional fee is required.

Ernest C. White, *LIE*
For Cecelia Newman
Decisions & Certificates
of Correction Branch
(703)
308-9390 x 122 or (703) 305-8228

TUNG & ASSOCIATES
Suite 120
838 W. Long Lake Road
Bloomfield Hills MI 48302

ecw